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**Subject:** LPRSA OU4 - NJDEP comments to the Interim Remedy Feasibility Study dated August 12, 2019  
**Date:** Tuesday, September 10, 2019 2:53:06 PM

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Diane, The New Jersey Department of Environmental Protection's (Department) comments to the August 12, 2019 Interim Remedy Feasibility Study (FS) are provided below. These comments are provided to the USEPA for consideration and discussion. Please be advised that the review of some of the FS appendices continues (Appendix B; Appendix H), however significant comments on the available appendices are not anticipated based on preliminary reviews. One comment on Appendix E is provided below.

### **General Comments**

Several topics need additional discussion and resolution as highlighted below:

Section 1, definitions of PRGs and RAOs

Section 2.6, Conceptual Site Model and Identification of Source Sediment

Section 3.1.3, Characterization of IR RAOs

Section 8.4, Comparative Analysis of Alternatives

Appendix H Outline – Comments will be provided for the Interim Remedy Completion Evaluation Framework

### **Specific Comments**

#### **Executive Summary Comments**

These comments should also be addressed in the main body of report in associated sections, as indicated.

1. Rationale for a Source Control Interim Remedy, text concerning Adaptive Management (AM): The Adaptive Management Appendix remains under development. The general description provided in this section is considered appropriate, with one possible adjustment. As currently written, AM appears focused on the IR post-construction monitoring phase. Although AM plays an important role at that time, AM should enhance the IR ROD 1 project from current conditions sampling/monitoring, through IR implementation monitoring, and throughout long-term monitoring until risk-acceptable surface water, sediment and biota conditions are achieved under ROD2. This comment applies also to Section 1.4 and future Appendix D, Adaptive Management.

2. Nature and Extent of Contamination in the Upper 9 Miles, 2<sup>nd</sup> & 3<sup>rd</sup> paragraphs – In addition to the information provided, it would be useful for readers to understand the maximum concentrations observed, when describing contaminant concentrations for 2,3,7,8-TCDD in the designated regions discussed. For example, current text describes 2,3,7,8-TCDD concentrations as “mostly less than 100 ng/kg” outside of silt regions above RM 12. However, the highly contaminated silt regions are the focus of this Interim Remedy, therefore, the general range (and maximum levels) of TCDD concentrations in these areas, versus the remaining regions of the river bed, are relevant and appropriate information for this project. In addition, from a conceptual point of view, it would be more appropriate to discuss these regions starting from most impacted to less contaminated, i.e., RM 8.3 and moving upstream. At a minimum, sufficiently expanded sediment contamination information is needed in corresponding Section 2.4.1 in support of this IR FS, with reference to the final, approved RI report (June 2019) for greater details.

3. Conceptual Model of Natural Recovery in the Upper 9 Miles, Third paragraph, text states: “Sediment and surface water data collected during the RI and post-remediation data collected in the RM 10.9 Removal Action area suggest reasonable thresholds for classifying source sediments are 2,3,7,8-TCDD concentrations above 300 ng/kg and total PCBs above 1 mg/kg.”

**Response:** The CPG identifies source as sediment regions reflective of concentrations greater than depositing water column contamination. However, the Department views source more broadly as contaminated sediment that remains available for exposure, erosion and re-distribution in the river’s ecosystem, which prevents/slows recovery to varying degrees (relative to sediment levels & erosion potential).

For the purposes of this IR, source will ultimately be identified through future RALs derived to meet RAOs 1 and 2. Note: Through CSTAG recommendation # 2, the CSTAG advised EPA to shape the IR using a % risk reduction parameter. As a result, the Agencies translated this into the post-remedial target SWACs to be achieved, which subsequently became IR RAO 1 goals.

This comment and expanded information should also be addressed in Section 2.6.

4. Remedial Action Objectives, 2nd sentence - Text states, “The overall goal of an IR for the upper 9 miles of the LPRSA is to control the most significant sediment sources of 2,3,7,8-TCDD and total PCBs above RM 8.3.”

**Response:** In this section and corresponding Section 3.1.3, remove the phrase “most significant.” This language has not been reflected in past working group documents and consensus has not been reached as to a definition of “most significant” sediment sources. Future RALs will be used to identify source sediment for this Interim Remedy. In addition, please see additional comments on Section 3.1.3 below.

5. The Remedial Alternatives, 2nd paragraph -Text states that Alternatives 2-5 incorporate the previously conducted or currently planned LPRSA action of Phase 1 removal, RM 10.9 removal action, and the planned 8-mile. It is unclear why Alternative 1 (no further action) would not also incorporate those activities into its own projections. If the NFA was not incorporated, this may lead to inadvertent/unintended bias in the interpretation of the difference among various alternatives to baseline. (clarification is needed)

6. Implementability & Table ES-3, Comparative Analysis of Remedial Alternatives – Under implementability, alternatives 2-4 have decreasing rankings. Although it is true that the longer duration of construction will result in increased potential worker exposure, the incremental increase in risk is expected to be small given the use of proper protective equipment that will be required of workers. Therefore, it is recommended that the implementability rankings be identical throughout alternatives 2-4. Corresponding language should be updated within associated sections.

7. Summary of the Comparative Analysis, 5th paragraph – “The additional remediation that would be performed under the larger-footprint alternatives does not provide additional source control because the targeted sediments have 2,3,7,8-TCDD and total PCB concentrations *lower than concentrations understood to be acting as internal sources* that are inhibiting recovery.” (italics identify comment emphasis)

**Response:**

- a. What constitutes “source” has not been definitively defined for this IR. The future RAL as determined by PDI data will identify “source” material for the selected alternative. Alternatives with larger footprints than alternative 2 should not be regarded as “additional remediations” as this incorrectly assumes that Alternatives 3 and 4 are unnecessary. This paragraph additionally states that the larger footprint alternative would result in minimal additional SWAC reductions and no projected increases in rates of recovery. In response, please refer to comment 22 on Section 8.4. This paragraph should not take Alternative 2 as the default but instead, objectively state that the alternative equally achieves the balancing criteria.
- b. Consideration is needed for adding a criterion that considers the risk of exceeding 85 ppt.
- c. Language in the last paragraph should be edited to disregard alternative 3 and 4 as “additional removals.”

**Main FS Sections**

**Section 1**

1. Section 1.3.1 Definitions for the FS:

- a. PRGs: Text states: “Risk-based PRGs may be represented as a range of values corresponding to a risk level or range considered acceptable by EPA.”

**Response:** Clarification of this broad statement is needed, particularly the context of “range of values,” as well as a supporting citation to CERCLA Guidance. Typically, an *array* of risk-based PRGs are developed in response to a project’s contaminant- receptor exposure pathways for which unacceptable risk (either cancer-based risk and/or non-cancer-based hazard) has been identified in the risk assessments. Each derived PRG is in direct response to individual contaminant -receptor exposure scenarios with identified, unacceptable, risk or hazard. In general, to protect the more sensitive receptors, the more stringent PRGs (considering cancer and non-cancer toxicity and taking background into account) are selected because these offer protection for a greater number of receptors for a project’s given contaminants or contaminant categories.

As a result, the NJDEP does not agree with the current FS definition of PRGs and affirms that PRGs are single quantitative goals that represent conservatism in protecting sensitive populations on site. Sentences 3 and 4 should be revised.

b. RAOs: Although it may be true that RAOs provide a general description of the proposed response action, the RAOs developed for the Upper 9 Mile Interim Remedy are specific goals to be attained (USEPA, Dec.14, 2018). Please also refer to comment 9a below.

c. RALs, last sentence: “RALs may also differ among different areas of a site, depending on the magnitude and type of risk to be addressed, land use, and the expected rate of future natural recovery.”

**Response:** This statement is in general agreement with CTAG recommendation 4b. Discussion may be warranted whether varying RALs will be applied within this project. A statement should be added that this would be determined based on PDI information during remedial design.

2. Section 1.4 Adaptive Management – It is understood that FS Appendix D, Adaptive Management Framework, is still under development and will be discussed in upcoming work group meetings. Adaptive management should be used as a tool to identify key areas of uncertainty for implementing the Interim Remedy and then identify ways to reduce these areas of uncertainty along the project’s timeline towards meeting CERCLA-compliant goals. Departmental comments on the draft AM Framework have been provided; please refer to prior Department comments, dated August 13, 2019 and provided by J. Nickerson, NJDEP, to D. Salkie, USEPA, on Aug. 14, 2019.

## **Section 2**

3. Figure 2-4: It is recommended that for the purposes of this upper 9 Mile IR, data representative of conditions below RM 8.3 are either removed from Figure 2-4, or a new figure generated, to be specific to information for RM 8.3 - 15. The revised or new figure should, if possible, indicate the proportion/amount of sedimentation rate data available per river mile (or other appropriate demarcation) along with indicated rate, between RM 8.3 and RM 15. Appropriate caveats should be included in the legend.

4. Section 2.4.3, text states: “Water column measurements indicate that 2,3,7,8-TCDD concentrations are low at Dundee Dam”: Clarification needed on whether authors are referring to data from above or below the dam.

## **5. Section 2.5, Summary of Risk Assessments**

a. Human Health Risk, first paragraph, last sentence: With regard to describing risks from eating fish and crab from this river, this section needs to be revised to better reflect Section 8.5 of the approved Final BHHRA, especially bullets 1 and 3 of that section. At a minimum, add clarifying statements that the Reasonable Maximum Exposure (RME) scenarios for this project reveal unacceptable risk and these are based on evaluating ingestion risks using equal-weight compositions of tissue from 4-5 fish, for fish-only recreational consumers, and combined hepatopancreas & muscle tissue for crab, for crab-only recreational consumers (language from the approved BHHRA should be used here).

b. For the statement: “Unacceptable risks to ecological receptors were identified for ....,”

**Response:** Add full list of contaminants and receptors *for which unacceptable risk was identified*. This is considered relevant project information, in addition to identifying those categories considered risk drivers.

c. Text states: “While there are statistically significant relationships between observed benthic community impairment and sediment chemistry/habitat conditions, the statistical relationships for individual contaminants are not strong.”

**Response:** The BERA concludes: “Sediment contamination in the LPRSA also has the potential to cause toxicity to or alter benthic community structure and function. Statistical analysis in Appendix P (Section 4.2.2) indicates that benthic invertebrate community structure and sediment toxicity are negatively associated with a mixture of chemicals and/or habitat variables in LPRSA sediment.”

This FS section should become more clearly aligned with BERA conclusions. As discussed in the BERA and BHHRA, *all contaminants that were found to pose unacceptable risk/hazard were carried forward for evaluation as a COC*. However, the above-cited statement on the strength of a contaminant as a risk agent potentially undermines these prior conclusions and suggests that some contaminants should not be regarded or prioritized, even though they have been characterized to pose unacceptable risk/hazard.

#### 6. Section 2.6, Conceptual Model Conceptual Model of Natural Recovery in the Upper 9 Miles

a. With regard to the opening paragraph discussing influences on sediment recovery, recovery prevention is not limited to only surface sediment which COCs greater than current Water Column levels, correct? It is influenced by all contaminated sediment above risk-based levels and background conditions that become mobilized and re-deposit elsewhere in the river; collectively these levels contribute to ongoing impacted conditions.

b. Also, for the statement: “A conclusion from this principle is that remediating sediment with COC concentrations higher than on the particles depositing from the water column will significantly reduce concentrations on those particles and accelerate concentration reductions in the remaining sediment. These higher concentration sediments are considered source material.”

**Response:** Source material for this Source Removal Interim Remedy can be defined in various ways. However, ultimately, source sediment will be identified for remedial action based on PDI information to identify the RAL(s) and the sediment regions greater than these RAL(s), needed to achieve the RAO 1 SWACs and to achieve RAO 2. Please also refer to Executive Comment 3 above.

7. In the same section, text describes “non-source sediment.” Such a demarcation, if made, must be directly related to achieving the target post-remedial sediment SWACs, as described in 6b above. The term “non-source” for describing contaminated sediment below 300 ppt should be removed because any/all contaminated sediment that becomes mobilized and redistributed in the river is a form of source material and prevents recovery to risk-acceptable

and/or background conditions (Exec comment 3).

### Section 3

#### 8. Section 3.1.3., Remedial Action Objectives

a. Regarding discussion of the RAOs, the first paragraph states that “an IR will eliminate elevated contaminant concentrations” and “eliminate the potential mobilization of elevated concentrations of the two contaminants....”

**Response:** The goal of the FS is to eliminate exceedances of the Interim Remedy RAOs, with the understanding that additional actions and/or Monitored Natural Recovery under a final ROD may be needed to further reduce elevated concentrations to below risk-based targets. This language should be modified to clarify that the IR will meet the IR RAOs.

b. Text also states: “The overall goal of an IR for the upper 9 miles of the LPRSA is to control the most significant sediment sources of 2,3,7,8-TCDD and total PCBs above RM 8.3.”

**Response:** Remove phrase “most significant”; see Executive Summary comment 3 above.

c. In second paragraph, add statement to identify the total PCB post-remedial SWAC goal of 0.46 ppm for RAO1.

### Section 5

9. Section 5.1.2.3, Informational Devices: Consider amending title to “Regulatory and Informational Devices” and in addition to the existing statement referring to State fish and crab consumption bans and advisories, include statement regarding the NJDEP prohibition/ban for crab collection that is in effect throughout the entire lower Passaic River. Please refer to [https://www.nj.gov/dep/dsr/fishadvisories/Fish\\_Advisories\\_2019.pdf](https://www.nj.gov/dep/dsr/fishadvisories/Fish_Advisories_2019.pdf) .

10. Section 5.1.3 Natural Recovery – As this FS is specific for the IR, natural recovery (monitored and enhanced) would not be directly applicable given the agreed upon tenets of the State’s involvement. (M. Pedersen email 10/10/2018). However, it is agreed that implementation of an IR supports natural recovery processes and MNR and/or ENR work towards and may become part of ROD 2, the final remedy.

11. Section 5.1.7, Sediment Removal: Text states: “Sediment removal to be performed as part of an upper 9-mile IR would be completed, at a minimum, to the depths necessary to accommodate capping.”

**Response:** Clarification needed because this statement may not fully capture the needs/expectations of the IR for this project. As noted in the next statement of referenced text, in some areas where sediment contamination above RALs is relatively shallow, a dredge to clean approach may be utilized (as recommended by CSTAG # 9a). In addition, unlike the lower 8-Mile ROD for which a bank to bank engineered cap will be utilized, this IR addresses source areas in a hot spot fashion and a minimum, preferred dredge depth may be advantageous/selected regardless of cap design, to better address the river’s erosional characteristics above RM 8.3 and to address both IR RAO 1 and 2.

12. Section 5.1.9.1 and 5.1.9.2, CADs and CDFs: It should be noted that the USEPA sought specific public input on the use of a CAD for DASS-OU2 and most commenters, including the State of New Jersey, expressed strong opposition to the use of a CAD in Newark Bay for dredged material management/disposal of contaminated sediment from the lower Passaic River. Both CADs and CDFs are not currently considered acceptable/viable options to the State of NJ and therefore should be screened out.

13. Section 5.1.9: Last sentence of this section states: “Disposal in a RCRA Subtitle D facility has been retained for further evaluation during remedial design.”

**Response:** Regarding possible future consideration of RCRA Subtitle D landfills for dredged sediment disposal from this project, it should be noted that such disposal is not only contingent on a non-hazardous determination, but also contingent on facility-specific acceptance criteria for material impacted by chlorinated dioxins and furans.

## **Section 7**

14. Section 7.1.1 Dredge, Text states: “Sediment would be removed to the depths necessary to accommodate sediment caps.” Please refer to comment 12 Above.

15. Section 7.1.4, Capping: Cap design should also be informed by modeling for a time period beyond 100 years (200 or 500 years; refer to DASS-OU2 cap modeling) as the planned engineered cap in the LPR upper 9 mile region also needs to maintain physical and chemical isolation integrity in perpetuity.

16. Section 7.2.1 Remedial Alternative Footprints, 2nd to last paragraph – Text states: “The main difference is that the identification of erosional areas for the RAO 2 targeting was based on the model-predicted long-term erosion rate.”

**Response:** Clarification needed; please further describe how RAO 2 sediment will be identified, and for 2,3,7,8-TCDD, include discussion of the differences for RAO 2 based on 1x RAO1 and 2x RAO1, and include citation for the modeling work group agreement/decision document for how RAO 2 for 2,3,7,8-TCDD will be determined. Appendix B is still under review and further comments may be provided.

## 17. Section 7.3

The term “additional dredging” as applied to Alternatives 3 & 4 should be removed from all sections.

## 18. Section 7.2, Dredged Material Management:

a. Text states: “Nonhazardous dredged material may be accepted for direct disposal in a RCRA Subtitle D facility, contingent on the facility’s permit and available space.”

**Response:** Regarding acceptance at Subtitle D facilities, see comment 14 above.

b. Text states: “Waste characterization sampling conducted at the point of waste generation, during the dredged material management process.”

**Response:** Improved description is needed of when waste characterization testing would be

performed. It's expected that preliminary characterization would occur during PDI, with final testing taking place prior to disposal according to receiving facility requirements.

## **Section 8**

### 19. 8.4 Comparative Analysis of the Alternatives, 8.4.2 Primary Balancing Criteria

- On page 8-51, second paragraph, modeled outcomes for the 10 years following completion under alternatives 2, 3, and 4 are compared and it is asserted that “the degree of SWAC reduction at the completion of construction does not result in appreciably lower SWACs in the 10 years following construction (Figure 8-5).” This conclusion is not accurate. As reported in Table 7-1, these three alternatives are expected to achieve respective SWACs of 80, 70, and 60 ppt 2,3,7,8. The alternatives that set lower targets would achieve lower SWACs as intended. As reported in the same paragraph, Figure 8-6 shows comparable rates of recovery for these three alternatives in the 10 years following construction. This indicates that the successively greater post-construction source control achieved by alternatives 3 and 4, relative to alternative 2, would persist through the first 10 years after construction, resulting in lower SWACs at the end of the period, and earlier achievement of risk-based targets under subsequent natural recovery.

The same paragraph notes that the “projected differences among the post-IR SWACs for Alternatives 2, 3, and 4 are within the range of the model sensitivity projections,” referring to Figure 8-4, and asserts that “the similarity in model projections of sediment SWACs suggests that Alternatives 2, 3, and 4 would provide the same levels of source control, and the uncertainty in model inputs and parameterization precludes concluding that the very small differences in the projected SWACs are meaningful.” This conclusion contradicts the statement on Page 6-2 that “Overlap [in the range of Post-IR concentrations] is not in itself presumed to render alternatives indistinguishable.”

The sensitivity projections in Figure 8-4 were developed by modeling Alternative 3 under the base case contaminant maps (CS 37) and two bounding cases (CS 57 and 81); then determining the percentage differences in the three cases in each year; and finally applying the same percentage differences to the other alternatives to represent the high and low cases. What Figure 8-5 shows is that the modeled SWACs in each year are sensitive to the preconstruction contaminant map assumed. Figure 8-5 also indicates that Alternative 4 produces lower SWACs throughout the modeled period when a more favorable starting condition such as contaminant map CS 81 is assumed, and higher SWACs throughout the modeling period when a less favorable starting condition such as CS 57 is assumed. This section does not demonstrate the same level of source control under Alternatives 2, 3, and 4 for any specific set of assumptions, or propose any specific circumstance where the level of source control might be the same for each alternative.

The Executive Summary (page xxi), Section 8.4.2.5 on Cost (p 8-54), and Section 8.5 Comparative Analysis Summary (p 8-56) all repeat the incorrect inference that the three alternatives provide the same level of source control. The intended and quantifiable differences in source control shown in the modeling results should be acknowledged and weighed against the other balancing criteria in the Comparative Analysis.

### 20. Table 8-7, Comparative Analysis of Alternatives and corresponding sections in 8.4:



a. Item 3, Long-Term Effectiveness and Permanence, *Source Control*: An apparent premise used for the source control comparative analysis is that 300 ppt is used as an absolute demarcation of “achievement”; alternatives that are anticipated to implement RALs below 300 ppt are equally weighted. The Department does not agree with how this metric is used. It is unclear how Alts 2 – 4 are equal-weighted when *greater* source control is expected to be achieved progressively by Alt 2, Alt 3 and Alt 4 based on the Key Metrics Summary. This metric requires adjustment to show greatest source control by Alt 4, followed by Alt 3, followed by Alt 2, followed by Alt 5.

b. Item 5, Short-Term Effectiveness, add new metric: *Likelihood or Degree of Confidence in achieving RAOs*: Given the Key Metrics Summary the degree of confidence (or similar metric) in achieving RAOs is needed. Alt 4 is most likely, followed by Alt 3, followed by Alt 2, followed Alt 5.

21. 8.1.4.2 Primary Balancing Criteria, source control – Please provide expected time projections for Figures 8-1a-d and Fig 8-2a-d, as well as 8-3 and 8-4. Also, identify map CS#37 as base map used, if applicable. Finally, for Figures 8-1a-d, if feasible, identify the approximate area and sediment volume comprising the different contaminant categories depicted/estimated under pre-remedial conditions, and add this information to the legend (or reference the appropriate table for same in legend).

22. Section 8.1.4 IR FS Metrics, Recovery Potential – How would recovery potential be measured? Recovery to what condition – PRGs, RAO goals? The figures listed to showcase recovery potential are the same as source control. Clarification needed.

23. 8.4.2.3 Short term effectiveness – It is not necessarily true that Alt 2 is more “advantageous” because it would have the fewest impacts to workers, communities, and the ecosystem. Although it may be considered advantageous due to a shorter in-river disturbance for workers, communities, and ecosystem, it is not advantageous regarding achieving CERCLA goals because more contamination is left in the river, with post-construction conditions equating to higher levels of contamination/risk as compared to Alternatives 3 & 4, and a longer period of time to achieve CERCLA-compliant, risk-acceptable conditions.

24. Section 8.5, text references 300 ppt for 2,3,7,8-TCDD and states: “Addressing sediment with concentrations below these values would not be expected to contribute substantially to recovery.” In addition, in the next paragraph when describing Alternatives 2-4, text also states: “These three alternatives all address sediment sources, and the alternatives with greater remediated volumes (Alternatives 3 and 4) do not provide additional source control because their associated RALs are all lower than concentrations understood to be acting as internal sources and inhibiting recovery potential.”

**Response:** The Department disagrees with these assumptions for reasons already described above regarding conceptual site model of system recovery, use of 300 ppt as an absolute demarcation of “source” and “non-source” material, and comments provided above on Section 8.4 and Table 8-7.

25. Figures 8-3: The concentration bins should be adjusted and split into smaller segments instead of the current bins of 10 – 300 ppt and 300 ppt – 1,000 ppt. Given the higher interest in much lower levels, post -remediation, the following bins for comparison are recommended: 10 – 100 ppt, 100 – 300 ppt, 300-500 ppt, 500- 1,000 ppt. The remaining bins (lowest and

highest) are fine.

26. Appendix E, Lessons Learned from Early Actions on the LPR: Add section discussing development of the RM 10.9 TCRA Long-Term Monitoring Plan, challenges encountered and resulting resolutions. Agreement on the metrics for post-remedial engineered cap operation/maintenance, and the metrics/methods for long term monitoring, need to be developed early on in the project, preferable simultaneously with cap design to ensure compatibility between cap and preferred long-term monitoring methods.

If you have any questions regarding the above mentioned comments, please contact me as provided below.

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